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The Effect Of Choice On Off Task Behavior In A Child With Autism

Stacia Gibson
Eastern Illinois University

THE EFFECT OF CHOICE ON OFF TASK BEHAVIOR IN A CHILD WITH AUTISM

GIBSON

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The Effect of Choice on Off Task Behavior in a Child with Autism

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BY

Stacia Gibson

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Gail J. Richard
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The Effect of Choice on Off Task Behavior in a Child with Autism

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B.S., 1997, Eastern Illinois University

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Abstract

Research has included speculation regarding the effect of choice on off-task behavior in children with autism (Dyer, Dunlap, & Winterling 1990), but definitive studies in this area have been lacking. This research project was designed to examine the effects of child-choice versus clinician-choice for the sequencing of activities on different variables. The dependent variables included off-task behavior and non-task related and task related verbal behaviors. The independent variable was the presentation of choice in the order of activities within a therapy session.

The subject in this case study was a four year old male diagnosed with a Pervasive Developmental Disorder displaying autistic-like characteristics. The project was implemented by using paper grocery bags containing activities for the therapy session. Either the subject or the clinician chose the order of activities for each therapy session. Behaviors were then recorded to determine if the amount of off-task behavior varied significantly across the two conditions.

Results of the study revealed a significant difference in the amount of off-task behavior across the two conditions. No significant differences were found in the number of clinician reminders or verbal behavior, task related or non-task related, across the two conditions.

This study was unique as compared to previous studies because choice was isolated as a dependent variable. While previous studies have alluded to the effects of choice on problematic behavior in children with handicaps, this study controlled extraneous variables,(e.g., differences in activities and clinician reminders) to isolate choice as the dependent

variable. Consequently, it can be concluded that choice was an important variable in the reduction of off-task behavior in a child with autism.

The study provides a foundation upon which to structure a therapy session utilizing choice. The provision of choice in regard to order of activities could be used in individual or small group therapy sessions to control off-task behavior and positively influence attention during the session. The results from this study might also generalize to the classroom and/or home setting to accomplish a reduction in problematic/off-task behavior.

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Review of Literature

Dr. Leo Kanner first recorded accounts of the syndrome which he called *early infantile autism* in 1943. When he looked at the characteristics in eleven children that he had described as having this syndrome, he found many distinctive features which set them apart from other children. These exceptional features included an inability to relate to others, atypical language development or mutism, insistence on maintaining sameness throughout the environment, stereotyped play with objects, a lack of imagination, splinter areas of ability, normal physical appearance, and an onset during infancy. The most discriminating characteristic of these children was social isolation. The term Kanner coined, *autism*, means "self" because the autistic children seemed to be intrinsically focused in their own personal world. Since Kanner first identified the syndrome, various definitions have been proposed to better identify and designate the characteristics of autism, but Kanner's identification of features has retained its saliency (Richard, 1997).

Autism is a disorder within the category of pervasive developmental disorders. A pervasive developmental disorder, as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), is a disorder characterized by severe impairment in several separate areas of development. These include social interaction skills, communication skills, stereotyped behavior, interests and activities, with onset by age three years. Included in pervasive developmental disorders are Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, Pervasive Developmental Disorder-Not Otherwise Specified, and

Autistic Disorder. In other words, autism is one kind of a pervasive developmental disorder. Fred Volkmar described the relationship as "autism is to pervasive developmental disorder as apple is to fruit" (1997). The DSM-IV outlined the following as the diagnostic criteria for classification of an Autistic Disorder:

A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):
   - (1) qualitative impairment in social interaction, as manifested by at least two of the following:
     - (a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
     - (b) failure to develop peer relationships appropriate to developmental level
     - (c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing or pointing out objects of interest)
     - (d) lack of social or emotional reciprocity
   - (2) qualitative impairments in communication as manifested by at least one of the following:
     - (a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
     - (b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
     - (c) stereotyped and repetitive use of language or idiosyncratic language
     - (d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
   - (3) restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
     - (a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
     - (b) apparently inflexible adherence to specific, nonfunctional routines or rituals
     - (c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
     - (d) persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

As can be inferred from the diagnostic criteria, autism is a spectrum disorder which invades all aspects of a child's development, including communication, social interaction, and behavioral patterns.

Autism is the third most common developmental disability affecting approximately 15 children in every 10,000 births (Richard, 1997). There also is a higher incidence of autism in the male population, ranging from 2.6 males to every female to 4.1 males to every female (Richard). Gail Gillingham (1995) reported that 60% of autistic patients have IQ scores below 50, 20% between 50 and 70, and 20% have scores greater than 70. Other statistics have reported that 2/3 to 3/4 of all autistic children have an IQ below 70 (Richard). These statistics show that autism is a prevalent disorder that can include a component of cognitive impairment.

As described by Kanner and the DSM-IV, autism has many behavioral characteristics associated with it. These characteristics can directly influence the effectiveness of therapy with an autistic individual. One of the characteristic features is self-stimulation. Self-stimulative, or stereotypic, behaviors are repetitive behaviors that the autistic individual engages in for prolonged periods of time. These can include hand flapping, twirling objects, body rocking and other behaviors that provide sensory or kinesthetic feedback (Lovaas, Litrownik, & Mann, 1971). Self-stimulatory behaviors may interfere with other more appropriate behaviors in the autistic individual. Kern, Koegel, & Dunlap (1984) found that when self-stimulatory behaviors were suppressed, increases in spontaneous responding and play were noticed .

Another possible behavior characteristic of individuals with autism is self-injurious or aggressive behavior. Currently, this type of harmful behavior is believed to be functional in nature. It has been theorized that

individuals with autism may try to meet their needs through this inappropriate behavior (Koegel & Koegel, 1995). Until other more functional means of communicating the same message are acquired, this behavior could interfere with a therapy session and result in minimal accomplishment.

Many children with autism also show the characteristic of a demand for sameness and preoccupation with objects. Children with autism may interact with objects in the same way each time they play with them or require the same routine within an activity each day. This preoccupation with sameness can cause many behavior problems if their schedule is changed. For example, a significant disruption in a therapy session can be triggered if rooms are changed or the activities are different (Koegel & Koegel, 1995).

Language deficits were another aspect of autism noted by Kanner in 1943. Further research has substantiated language to be an integral part of the autistic spectrum. Verbal language does not develop at all in a small number of children with autism; at one point it was estimated that up to 50% of children with autism never developed functional expressive language (Prizant, 1983). Due to current advances in language teaching, many more children develop verbal language abilities.

Autistic children can have a spectrum of language disorders ranging from problems with phonology and disfluency to problems with comprehension of language, organization of utterances, prosody, and pragmatics. It is important to remember that all children with autism have a language disorder, as classified by the DSM-IV. In general, the language characteristics of children with autism can be defined as fitting one of three categories: nonverbal, delayed verbal, or echolalic (Koegel & Koegel,

1995). Children who are nonverbal should be taught alternative means of communication and ways to express their intent other than through aberrant behavior. Children with delayed verbal language have some speech but show marked delays in the different language areas, such as phonology, syntax, and semantics. The third characteristic common in autistic language is echolalia. This is described as repetition of an utterance heard in either the immediate or distant past. These utterances are believed to lack communicative intent and may possibly serve a self stimulatory function (Koegel & Koegel, 1995).

Some researchers have linked the cognitive and social deficits seen in autism to a "theory of the mind" hypothesis (Baron-Cohen, Tager-Flusberg, & Cohen, 1993). This theory states that individuals with autism have great difficulty interpreting a person's actions within a mental framework. They believe that infants with autism fail to understand the intentionality of someone's behavior and thus cannot replicate and orient to it. When children with autism do acquire language, they do not use it to share information with others or to ask for new information. Autistic individuals can also have a problem understanding that the speaker and listener have different perspectives in a conversation and often refer to themselves as *you* (Tager-Flusberg, 1996).

Whetherby & Prutting (1984) compared the language of autistic children aged 6-12 with a group of control children without disabilities. They concluded that autistic children used far fewer communication acts, and the language used was for requesting objects, actions, and protesting. The normal children's most common function of language was labeling. Rapin and Dunn (1997) determined that normal children learn very early the power of language to alter another person's behavior to their

advantage. However, children with autism generally lack the pragmatic skills to generate language at a level where it can change a person's behavior. These pragmatic delays can include inappropriate eye contact, inappropriate initiation and maintenance of conversation, prosody of the voice, and other skills.

Kanner discussed social communication as the most significant delay in children with autism. This lack of social communication intent is found in nearly every autistic child. When an autistic individual does acquire language, it is usually only used instrumentally to express desires and wishes. The child with autism usually lacks pragmatic developments such as eye contact, initiating conversation, and responding in conversation to others (L.K. Koegel, Koegel, Hurley, & Frea, 1992). If these signs of reduced social communication are present, it should be a focus of further intervention for the child with autism.

It has been theorized that the autistic child's main disability is with communication, while other characteristics of the syndrome are secondary to the communication problem. L. K. Koegel, Koegel, Hurley, and Frea (1992) found that if autistic children could engage in appropriate communication behaviors, other "negative" characteristics associated with autism decreased. Consequently, they concluded that language should be a primary focus of intervention due to the overwhelming impact it can have on the entire spectrum of the disorder.

Language intervention has been the focus of many studies to decrease disruptive behavior seen in children with autism. Koegel, Koegel & Surrant (1992) tested preschool children to see if a natural language paradigm teaching situation might reduce the disruptive behavior seen in autistic children. The natural language paradigm was a child-chosen task

and was more driven by the child, while the analog teaching task was chosen and driven by the clinician. The researchers examined language targets, disruptive behaviors, and clinician behaviors (e.g., how long the clinician teaching times were across both tasks). Results demonstrated that the natural teaching approach produced more correct target behavior and less disruptive behavior among the autistic preschoolers (Koegel, Koegel & Surrant, 1992).

Before language goals can be effectively targeted in intervention, many of the behaviors characteristic of autism need to be addressed, either prior to or in conjunction with the current therapy. The disruptive behavior patterns evidenced in autism have prompted research in the area of behavioral modification to evaluate how children with autism react to changes and modifications in their environment. A variety of different types of behaviors have been targeted in these studies with diverse intervention methodologies.

Kanner first treated autism in 1943 by treating the parents. He believed the core of the problem was that these children had "refrigerator parents" or parents who did not react to their children. Further research has shown that the parents were reacting to their child; the child was not reacting to the parent (Richard, 1997).

In the past, specific characteristics of autism were managed through aversive therapy techniques, such as electric shock. These interventions were effective in some cases at controlling very severe self-injurious behavior. However, recent controversies have raged over the ethical and legal implications of this type of therapy. The National Institute of Health sponsored a statement that gave specific guidelines for future use of electric

shock (Elder, 1996). Because of these guidelines, electric shock therapy is not currently used in a widespread manner.

Intensive behavior therapy has gained increased attention in recent years. Programs such as one designed by O. Lovaas (1977) require treatment during most of the child's waking hours and involve almost all of the people in the child's life, including therapists, teachers, and parents. Dramatic success stories have been reported anecdotally (Singh, 1997), but are suspect due to methodological problems and the lack of replicated success in older children and those with mental retardation (Campbell, Schopler, Cueva, & Hallin, 1996).

Other studies in the literature have focused on a single behavior or variable pertinent to autistic children and their behavior. Koegel & Covert (1972) completed a study on the relationship of self-stimulation and learning in children with autism. Their study demonstrated that when the children engaged in self-stimulating behaviors, learning was suppressed. Targeted objectives were discrimination learning and responding differently to positive and negative stimuli. The researchers found that a discrimination task was not successful while the children were engaged in self-stimulation; when these behaviors were suppressed, there was an increase in correct responses. They concluded that successful discrimination learning was associated with a reduction in self-stimulatory behavior.

Functional communication training has been an issue of interest as an attempt to control serious misbehavior in children with autism. Carr and Durand (1985) sought to discover whether behavior problems could be reduced if a communication response that served the same function as the inappropriate behavior was taught to the child. They determined that many

disruptive communicative behaviors served a specific social function, such as escape requests or attention-seeking requests. They believed that if a child was taught an appropriate response to obtain an adult's attention, the inappropriate behavior would decrease because the function of the behavior was already accounted for. Their study supported that hypothesis, suggesting that people around disabled children with behavior problems should consider interpreting the misbehavior as a form of nonverbal communication. They concluded that this perspective could lead toward developing more effective ways of intervening with inappropriate behavior.

Garretson, Fein, and Waterhouse (1990) examined the lack of sustained attention often observed in children with autism. Their study found that autistic children did not significantly vary in attention as compared to normal children. In fact, some aspects of their data suggested that the children with autism were more responsive than normal children to changes in reinforcement modalities. This study seemed to confirm that understanding the motivational framework of the autistic child would be an important factor in determining effective intervention techniques within autism.

Other research investigated modifying the stimuli a child received to manipulate how the autistic client reacted. Dunlap and Koegel (1980) studied how stimulus variation affected children with autism. The research questioned whether a varied task condition (i.e., the target task interspersed among other tasks), as compared to a constant task condition (i.e., presenting a single discrimination task), made a difference in the performance of the individual with autism. Discrimination tasks and response acquisition tasks were studied regarding the effectiveness of each

condition on them. They found that although the varied task condition produced superior performance on discrimination tasks, the effectiveness of varied task conditions on long term response acquisition was unclear. The results suggested that different methods of task variation might be necessary and useful in motivating children with autism.

Morrison and Rosales-Ruiz (1997) studied the effect of object preference on task performance and stereotypy in children with autism. They found that a child's highly preferred objects seemed to evoke stereotypy and thus worsen task performance. They attributed this to the tactile stimuli or characteristics of the preferred toys. Additionally, the researchers speculated that children chose specific toys as their preferred toys due to the reinforcing stereotypic quality of them. However, the study represented a very limited task and the researchers questioned carryover to more natural tasks.

The influence of child-preferred activities on social behavior was examined by Koegel, Dyer, and Bell (1987). This study investigated whether engaging in appropriate child-preferred activities, as opposed to engaging in arbitrarily adult chosen activities, related to the amount of social avoidance behavior exhibited. Results showed that child-preferred activities decreased social avoidance behavior when an adult was present in the room. The results also showed carryover in community settings when this type of behavior modification was implemented. This study suggested that if a child prefers an activity and is able to share control, improvements in social behavior may occur.

Foster-Johnson, Ferro, and Dunlap (1994) also examined the variable of child-preferred activities and their effect on problem behaviors. Their study focused on preferred versus unpreferred curricular activities

for the child to engage in. Stimulus items were identical but presented in different ways. Usually one task involved labeling (unpreferred) and the other was a more functional task and relevant to real-life circumstances (preferred). The researchers found that all three students included in the study demonstrated a higher percentage of problem behavior during the non-preferred activity as compared to the preferred activity. The authors believed the off-task/problem behavior was more desirable to a student during an unpreferred activity because it allowed the student to escape the unliked activity. The authors speculated the preferred activity was more pleasant to the student and, thus, reduced motivation to escape the activity.

Dyer, Dunlap and Winterling (1990) studied the effects of choice making on problem behaviors in students with severe handicaps. They studied the effects of students making a choice regarding rewards and materials for the task in which they would be engaged. The materials from which they chose were previous educational tasks which the students had mastered. The reinforcers were also previously shown to be preferred stimuli. Throughout the study, each child exhibited lower levels of problem behavior during the choice condition. Because reinforcers provided were the same across both stimuli, the authors speculated that the choice might be just as important as the tangible reinforcers provided by the therapists, although they did not isolate the choice variable from other factors that were uncontrolled.

Although studies have been conducted regarding the reduction of problematic/off-task behaviors when a child prefers an activity, other variables such as the child having a choice in the order of activities, has not been investigated. Implications have been made in several studies (Dyer, Dunlap, & Winterling, 1990; Koegel, Koegel, & Surrant, 1992) regarding

the reduction of problematic/off-task behavior when a child has control or choice in the therapy session, but research has not focused on choice as an independent variable. Studies have alluded to this phenomenon, but not directly shown that choice has an effect on off-task behavior.

Consequently, the present study was designed to examine the effects on off-task behavior when a child can determine the sequence of activities.

The following primary research questions were addressed:

1. Is there a significant difference in off-task behavior when the order of activities are clinician chosen versus client chosen?
2. Is there a significant difference in non-task related and taskrelated verbal behavior when the order of activities are clinician chosen versus client chosen?

The following secondary research question was addressed:

1. Is there a significant difference in clinician reminders when the order of activities are clinician chosen versus client chosen?

Chapter 2

Methods

This research project was designed to examine the effects of child-choice versus clinician-choice for the sequencing of activities on different variables. The dependent variables included off-task behavior and non-task related and task related verbal behaviors. Clinician reminders was a co-variable that was also recorded. The independent variable was the presentation of choice regarding the order of place of activities during the therapy session.

Subject

The subject for this research project was a four year old male diagnosed by a multidisciplinary team at the Judevine Center for Autism in St. Louis, Missouri with a Pervasive Developmental Disorder displaying autistic-like characteristics. At the initiation of this study, formal standardized language tests, specifically the Expressive One Word Picture Vocabulary Test and the Receptive One Word Picture Vocabulary Test, substantiated age appropriate developmental language skills.

The subject was an only child who lived with his mother and father. He was in good health, had normal hearing, and no other primary disabilities.

The subject's education began at two years of age in a birth to three program, which he attended every day for 5 hours per day. He was currently enrolled in a preschool early intervention program with a one-on-one aide in the classroom. He received supplemental speech-language

therapy in the preschool for 60 minutes per week. He also received private speech-language therapy for 50 minutes two times a week at a university clinic.

Parental permission to be part of the study was obtained (Appendix A). The research procedures were approved by the Eastern Illinois University's Grants and Research Committee for human subject research (Appendix B).

Equipment

Sessions were recorded by a Panasonic SZPB four head video cassette recorder, model AG-2530. Recordings were compiled on Polaroid Supercolor Plus videocassettes, then viewed on a RCA Color Trak 2000 Television. For audio development and projection of time interval recording, a 60 Minute Memorex cassette was used in a RQ 2101 Panasonic cassette recorder.

Procedures

The research project was implemented by a graduate clinician who was blind to the dependent variables being measured throughout the study. Supervision of clinical treatment was performed by a Ph.D. level speech-language pathologist with a Certificate of Clinical Competency in speech-language pathology.

The facilitation of the choice variable was achieved utilizing paper grocery bags marked for each activity of the session. Materials for each activity were contained in the bag. Each bag was marked with a picture identifying the place within the room in which the activity would occur. The bags were also marked with a written label for the site of the activity

(e.g., "Table Time"). Activity sites included floor time, table time, mirror time, and window time (Table 1). A picture of the client or the clinician, depending on who chose that day, was taped to the door leading into the hallway. This was intended to assist the client in distinguishing between the two experimental conditions.

Each bag contained the appropriate materials to complete the activity for the designated place. Activities varied across sessions, but consistency was maintained by retaining the same type of activity for each designated site, as explained in Table 1.

Table 1. Place of activities and type of activity

Table Time	Basic concept recognition activity which required the subject to sit in a chair at a table
Floor Time	Motor based activity (Hot Wheels, Little Tykes House) focused on basic concepts
Corner Time	Game, puzzle, or book activity
Craft/Snack Time	Either a craft or snack activity that took place at a table

On the days when it was the subject's turn to choose the order of activities (i.e., places for activities), the bags were placed inside the therapy room door along the wall. The subject was allowed to go to the wall with the bags lined up and choose which place of activity he wanted first. Because the specific materials were contained in the bag, the subject did not know the exact activity, but did know the type of activity by the identified site. The activity was then brought to the designated work area and taken out of the bag by the client. After the activity was completed, materials were returned to the bag and taken back to the wall. For purposes of this

study, completion of the activity was defined as completion of clinician goals to achieve closure on the activity, or the client's inattention and disruptive behaviors became so overwhelming that the activity was discontinued and could not be completed. Although these definitions were in place if needed, the subject never displayed behaviors that were so overwhelming the activity had to be terminated prior to the clinician completing established goals. The subject then chose the second activity for the day. The same procedure was followed until all activities had been chosen and completed. Extra time at the conclusion of the session allowed for an activity of the client's choice. This was only available if the client finished all previous activities.

When the clinician determined the choice of therapy activities, the bags were placed in the hallway outside the therapy room. The clinician went into the hallway and the clinician chose the activity bag. Each bag was marked with a number for the sequence of the activities (e.g., the first activity had a "1" on it), and also had the picture and written label of the place of activity. The clincian chose the order of activities randomly across each of the sessions. The materials for the activity within the bag followed the same guidelines as when the client chose the activity (Table 1). The client once again took the materials out of the bag once in the room. The same procedures were followed as with the client choice condition until all activities were chosen. Extra time during clinician-choice days also allowed for an activity of the client's choice. The same definitions for completion of the activity were used when the clinician chose the order of activities as when the client chose the order of activities.

The experimental period occurred for eleven weeks during the spring semester. Dates for the experimental session were February 2 -

April 22, 1998. This allowed the subject two weeks to adjust to the clinician and learn the type of activity associated with each designated site before the experimental period began. Sessions lasted for fifty minutes, two times per week. An alternating treatment design was used to determine the effect of client versus clinician choice of locations. The choice variable alternated each week to either Monday or Wednesday (e.g., If the first week was child choice on Monday and clinician choice on Wednesday, the second week was clinician choice on Monday and child choice on Wednesday). Behaviors identified as dependent variables were recorded from session tapes. Specific behaviors and their corresponding operational definitions are summarized in Table 2.

Recording of the observed behaviors was completed by the experimenter, a graduate student in her second semester of study. Behaviors were recorded from a videotape of the session Recording was done in interval data blocks (10 seconds observing, 5 seconds recording) throughout each activity across every session. The targeted behaviors were recorded on a form designed by the experimenter (Appendix C).

Table 2. Dependent variables and definitions

Leaves Work Area	The subject physically left the identified work site
Non-Task Related Verbal	The subject displayed non task related verbal behavior
Disruptive/Inappropriate Behavior	The subject displayed behavior that was not appropriate to the task or was physically disruptive
Task Related Verbal	The subject displayed a verbal behavior related to the task
Reminders	A verbal or physical redirection to the task was given by the clinician

For purposes of this study, off-task behaviors were obtained by combining three dependent variables - leaves work area, non-task related verbal, and disruptive/inappropriate behavior.

Analysis

Interjudge reliability was assessed by a graduate student in her second semester of study. The experimenter and the other recorder were involved in a training session for coding identified behaviors. One hundred minutes, approximately 17% of the tapes, were coded for reliability between both judges. This allowed for the judges to code two entire sessions during the fourth week of the experimental period. Interjudge reliability was analyzed using Overall Reliability, comparing the two observer's scoring for each interval for each behavior or class of behaviors (off-task behaviors). The percentage was then obtained by dividing the number of data collection intervals that were the same by the total number of intervals. The interjudge reliability rating between the two scorers was 92.5% for all off task behaviors, 99.3% for clinician reminders, and 90.6% for task related verbal behaviors. A summary of the reliability ratings are shown in Table 3.

Table 3. Summary of reliability ratings

Variables	Reliability Ratings
Off-Task Behaviors	92.5%
Clinician Reminders	99.3%
Task Related Verbal	90.6%

Chapter 3

Results

The purpose of this individual case study was to investigate the effect that choice of order of activities had on off-task behavior in a child with autism. The samples being tested for significance were child-choice and clinician-choice of order of activities. Since each sample was independent of the other, a *t-test for independent samples* was used to measure the differences between clinician-choice and child-choice data collection periods. Seven weeks of the eleven week experimental period yielded data that could be coded for analysis. Other weeks were compromised by extraneous variables, such as client absence and equipment failure during one or both sessions of the week.

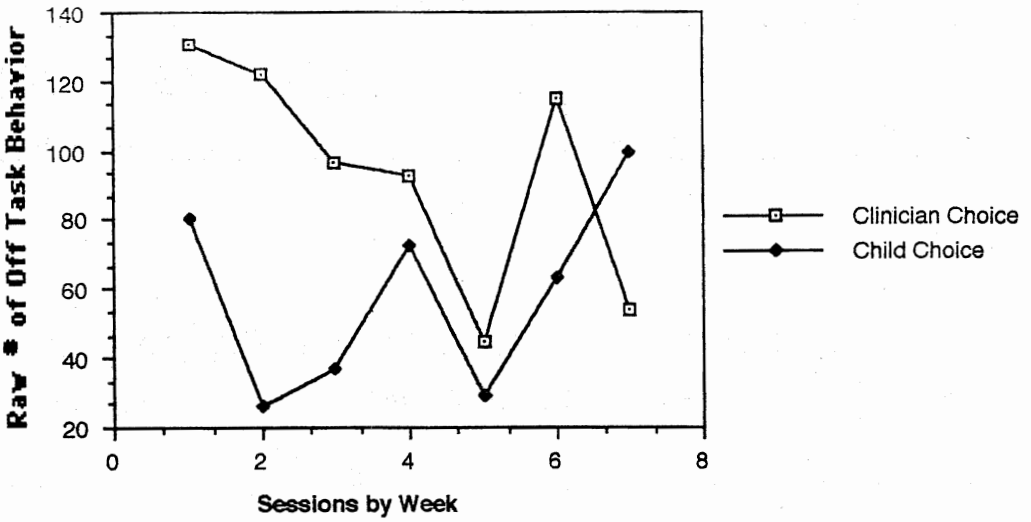
The first t-test was used to analyze differences in the number of off-task behaviors between the child-choice and clinician-choice conditions. The number of off-task behaviors was obtained by combining the dependent variables of leaves the work area, non-task related verbal, and disruptive/inappropriate behavior. The total number recorded across all sessions in each condition was then divided by the number of sessions for that condition (seven sessions). This calculation was then used as the mean number of behaviors. The mean number of behaviors in each condition, t-value, and probability level are summarized in Table 4. The raw data for off-task behaviors are charted in Graph 1.

Table 4. Differences in off-task behavior

Condition	Mean # behaviors	t-value	Probability level
Child Choice	58.2		
Clinician Choice	93.9	2.1583	.02*

* $p < .05$

Graph 1.Raw Number of Off-Task Behaviors by Week



A probability of $p < .05$ indicated a significant difference between off-task behaviors during the clinician-choice condition and the child-choice condition. The raw data chart also demonstrates a consistent difference between the two conditions with regard to off-task behavior. Six of the seven weeks yielded raw data in which the child demonstrated more off-task behavior during the clinician-choice session of the week. In other words, when the child had the choice of activity sites, the frequency of off-task behavior was significantly reduced as compared to when the clinician designated the choice of activity site.

T-tests were also administered to assess differences between non-task related verbal behavior and task related verbal behavior across both conditions. The total number of task related and non-task related verbal behaviors in each condition were divided by the total number of sessions, seven, in each condition to arrive at the mean number of behaviors. The mean number of behaviors, the t-values, and the probability levels are presented in Tables 5 & 6.

Table 5. Differences in non-task related verbal behavior

Condition	# of Non-Task Related Verbals	T-Value	Probability Level
Child Choice	38.8		
Clinician Choice	55.2	1.4778	.08

$p < .05$

Table 6. Differences in task related verbal behavior

Condition	# of Task Related Verbals	T-Value	Probability Level
Child Choice	97.7		
Clinician Choice	99.7	.1001	.46

$p < .05$

The probability level exceeded .05 for both types of behaviors, indicating that a significant difference did not exist between the two conditions in regard to verbal behavior. In other words, the child did not demonstrate significantly more task related verbal or non-task related verbalizations in the child-choice condition as compared to the clinician-choice condition.

An additional t-test was implemented to evaluate differences between clinician reminders in clinician-choice versus child-choice conditions. The total number of reminders recorded in each condition was then divided by the number of sessions in each condition to arrive at the mean number of reminders. The mean number of reminders across both conditions, t-value, and probability are summarized in Table 7.

Table 7. Differences in clinician reminders

Condition	Mean # Reminders	T-value	Probability Level
Child Choice	8.2		
Clinician Choice	13	.7811	.23

$p < .05$

Results indicated that a significant difference between reminders in the two conditions was not obtained. That is, the clinician did not give significantly more reminders during the clinician-choice variable as opposed to the child-choice variable.

In summary, results of a t-test for independent samples indicated that the number of off-task behaviors observed in child-choice as compared to the clinician-choice condition was significantly different. The number of clinician reminders was not found to be significantly different in this study. The amount of verbal behavior, non-task related or task related, also did not show significant differences between the clinician-choice and child-choice conditions. Table 8 summarizes data analysis used to address the proposed research questions.

Table 8. Summary of t-values and probability levels

Variables	T-value	Probability Level
Off-Task Behavior	2.1583	.02*
Clinician Reminders	.7811	.23
Non-Task Related Verbal	1.4778	.08
Task Related Verbal	.1001	.46

*$p < .05$

Chapter 4

Discussion

Summary of Results

Previous researchers have alluded to the fact that choice in activities may lead to less maladaptive/off-task behaviors in some children (Dyer, Dunlap, & Winterling, 1990; Koegel, Koegel, & Surrant, 1992). Although researchers have implied that choice might be an important precursor, it had not been examined as an independent variable in relationship to off-task behavior. The purpose of this study was to determine if a difference was seen in off-task behaviors when a child was given a choice in the order of location for activities within a session.

The first research question in the study sought to investigate whether giving choices to a child with autism throughout the therapy session made a significant difference in the number of off-task behaviors observed. Results summarized in Chapter 3 supported the theory that maladaptive behaviors were significantly different during the child-choice as compared to clinician-choice conditions.

The subject in the study definitely understood the difference between the two conditions and understood his role within the two conditions. Before entering the therapy room, the child routinely asked his clinician whose day it was to choose the activity. On some days when the clinician chose the order of activities, it almost seemed to disorient the subject. For example, during at least one therapy session in which the clinician chose, the subject's seemed to become disoriented when table time did not follow floor time, which was the order he usually chose during client-choice sessions. This seemed to result in more maladaptive behavior in the child;

he kept asking why they could not go to table time and kept returning to the table even though the designated activity was corner time. The days on which the child had the choice of activities, he seemed more focused on activities and not as worried about which activity was going to be presented next in the session.

Because the activities were similar across each of the therapy days, the client seemed to understand which type of activity he was choosing when he selected the bags. The subject chose activities in the same order on four of the seven days in which he had the choice. This seemed to be the order that the subject was most comfortable with. On six of the seven child-choice days, floor time was the first activity chosen. The subject's reaction to this activity during the session clearly showed that this was his favorite activity. The subject spent more time with this activity before needing to move on to the next activity and was more engaged throughout the entire activity as compared to other activities within the session. Further research could investigate whether other children choose their most preferred or least preferred activity as the first activity.

No significant differences were found in the number of non-task related verbal behaviors or task related verbal behaviors across the two conditions. These results are best explained by the child's age and preferences. The child's language was probably more dependent on the type of activity as compared to the child-choice or clinician-choice variable. Certain activities within the session provided more opportunities for the child to verbally respond with task related verbal as compared to other activities. Some activities were more conducive to non-task related verbal behaviors. For example, during floor time with the Little Tykes House, the clinician continually asked the child to identify the location of

the people they were playing with, giving more opportunity for the child to respond with task related verbal behavior. During corner time, though, the clinician did not ask as many direct questions and the child often did not respond appropriately to the game or displayed some perseverative language, possibly due to the lack of structure.

Even though there was not a significant difference between the two conditions with regard to verbal behaviors, it could be theorized that language would improve during the choice-making condition. The significant difference found in the amount of off-task behavior across the two conditions suggests that a child's attention to language goals would be more effective during the child-choice condition. Long-term effects of the decrease in problematic behavior should effect the language of the child and should be investigated further in future studies.

A more carefully controlled language variable might also yield significant results. Even though a significant difference of $p<.05$ was not achieved in regard to non-task related verbal behaviors, the probability level was close to significance at a .08 level. It could be theorized that a larger sample size or more specific variable definition might result in a significant difference.

Differences in clinician reminders across the two conditions was the focus of the secondary research question. Results of the study indicated that clinician reminders were not significantly different. In other words, it was not necessary to remind the child to stay on task or return to the task with higher frequency in either condition, i.e., during the child-choice sessions as compared to the clinician-choice sessions. Even though the clinician conducting the session was blind to this research variable, the manner of managing and conducting the session was consistent across both conditions.

In fact, across both conditions the child occasionally gave himself reminders when an off-task behavior occurred, e.g., "...is out of his seat. He needs to come back," before the clinician could remind him.

Relation to Past Studies/Research

Results from this study substantiated the results from Dyer, Dunlap, and Winterling's (1990) and Koegel, Koegel, and Surrant's (1992) studies regarding speculation that choice could directly affect maladaptive behavior. In the Dyer et al. study, the researchers speculated that giving a child a choice might reduce problem behaviors although this aspect was not specifically researched. The authors speculated that choice could have been a factor in reducing off-task behavior but the study did not control for outside factors that could have been influencing the choice.

In Koegel, Koegel, and Surrant's (1992) study, the researchers also speculated that choice could have been an important variable in the reduction of off-task behavior. Because that study was focused on the natural language paradigm and not specifically the variable of choice, the researchers could not link choice to the reduction in off-task behavior. Because the current study controlled many outside factors including activities, it can be concluded that choice is an important aspect in reducing off-task behavior when reinforcers and materials are the same across both tasks. This study showed that previous speculations by researchers were correct and that when the choice variable is isolated within a therapy session, a difference can be seen in maladaptive behaviors.

Practical/Theoretical Implications

The implications of this research can be broadened to many different settings which allow the child control over the environment through the option of choice. These results could be very practical to a speech-language pathologist determining how to structure a therapy session for a child with autism or autistic-like tendencies. Previous studies have speculated regarding the effect of choice on off-task behaviors, but this study provides a foundation upon which to structure a therapy session around utilization of the choice variable. Choice of activities or the order of activities could be used in individual or small group therapy sessions to control off-task behavior and positively influence attention during a session.

Results might have implications for a classroom setting. Because an effect was observed on the behavior of this child when given the choice of activities, choice could be an important variable in reducing inappropriate behavior in a classroom. Teachers could consider allowing children to assist in planning certain parts of the day or activities, especially those which tend to create behavioral resistance. For example, a child might be allowed to choose one of two math worksheets, both with the same goal or focus, to work on during math time. This might give the child a feeling of more control within the classroom, thereby reducing off-task behaviors. Allowing the child some feeling of choice and control during the classroom schedule might reduce the amount of maladaptive behaviors observed during peak times of behavioral resistance in the classroom.

Results of this research might also be generalized to the home setting for parents and caregivers. Allowing a child to choose the order of activities throughout the day might reduce maladaptive behaviors evidenced

in the home setting. For example, allowing a child to choose the order of activities in the nighttime schedule might improve compliance. A parent could list all of the things a child must do before going to bed, such as brushing teeth, picking up toys, taking a bath, and reading a book, and allow the child to choose from these activities as to which comes first and so forth. The option of choice might reduce misbehaviors previously seen when the child did not have control over the environment.

Limitations

Limitations in the current study included the following:

1. Small sample size - Because the current study only used one child, data cannot be generalized as easily to many children.
2. Small number of data collection periods - The current study only achieved 7 weeks of data out of a 10 week collection period. A longer sampling period might have yielded different results and results with greater reliability and validity.
3. More carefully controlled language/verbal variables - More specific language/verbal variable definitions may have yielded significant differences between the two conditions.
4. Limited context - The recording of behaviors only happened during a fifty minute language session.
5. Limited dependent variables - More dependent variables might have found significant differences in other behaviors across the session.

Future Studies

Future research studies should investigate the following:

1. A broader sample of children with different severity levels of autism to examine the effects of choice across different subtypes of autism.
2. A study which longitudinally examines the effect of choice in different settings such as the school classroom, the home, etc.
3. A study which examines the long-term effects of the choice variable on language and behavior of a child.
4. A study which examines how a child chooses preferred activities and how that effects behavior in the therapy session.
5. Replication of this study to determine generalization beyond this case study.

Conclusion

In conclusion, this study provides a foundation on which to further examine the effect of choice on off-task behavior in children. The implications of this study could be far reaching to various settings. The control of off-task behavior through the option of choice should be examined as a possibility for children with autism. Further research should be conducted regarding the potential long-term effects of this type of behavior modification and the potential effects of the choice variable on children with varying disabilities.

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Appendix A

Parental Permission

I grant permission for my child, _____, to participate in the research study, "The Effect of Choice on Off Task Behavior in A Child with Autism". The study will be incorporated into regularly scheduled therapy sessions and will not compromise therapy objectives. This study will be conducted by Stacia Gibson, a graduate student in the Department of Communication Disorders and Sciences, Eastern Illinois University, Charleston, Illinois under the direction of Dr. Gail J. Richard.

I understand that information in this study will be reported anonymously.

_____

Parent Signature

_____

Child's Birthdate

_____

Today's Date

Appendix B

Research Approval From Human Resource Office

Memorandum

To: Gail Richard, Professor of CDS and thesis advisor for student Stacia Gibson

From: Bud May, Director of Grants and Research

Date: February 9, 1998

Re: Institutional Review Board (IRB) review of a thesis proposal involving human subjects

****

The project "The Effect of Choice on Off Task Behavior in a Child with Autism" received IRB review and was approved on February 5, 1998. The student submitting the proposal/thesis was Stacia Gibson.

Please feel free to start the research and best of luck with the project.

c:
1. IRB reviewers
2. File

Appendix C

Activity Data Recording Sheet

DATE: Clinician Choice Child Choice

Activity 1: _____ ____Activity Begin ____Activity End ____Total Time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Leaves Work Area																													
Non Task Related Verbal																													
Disruptive/Inappropriate Behav																													
Clinician Reminders																													
Responses +/-																													

_____**% Accuracy**

Activity 2: _____ ____Activity Begin ____Activity End ____Total Time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Leaves Work Area																													
Non Task Related Verbal																													
Disruptive/Inappropriate Behav																													
Clinician Reminders																													
Responses +/-																													

_____**% Accuracy**

Activity 3: _____ ____Activity Begin ____Activity End ____Total Time

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Leaves Work Area																													
Non Task Related Verbal																													
Disruptive/Inappropriate Behav																													
Clinician Reminders																													
Responses +/-																													

_____**% Accuracy**

Leaves Work Area - The subject physically leaves the identified work site

Non Task Related Verbal- The subject displays non task related verbal behavior

Disruptive/Inappropriate - The subject displays physical behavior that is not appropriate to the task or is physically disruptive

Reminders- A verbal or physical redirection to the task given by the clinician

Task Related Verbal- The subject displays a verbal behavior related to the task